

## REMARKS

### Introductory Comments

As of the mailing date of the 01/21/2009 Office Action, claims 2-11, 16, 30 and 34 were pending in the present application. In the present amendment, claims 2-11, 30, and 34 have been canceled without prejudice, claim 16 has been amended, and claims 35-45 have been added, leaving claims 16 and 35-45 for consideration upon entry of the present Amendment. The claims have been amended as explained below. Reconsideration and allowance of the claims is respectfully requested in view of the foregoing amendments and the following remarks.

### Claim Amendments

Claims 2-11, 30, and 34 have been canceled without prejudice.

Claim 16 has been amended to add the limitation, “wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by a process selected from oxidation, acid modification, heat treatment, acetylation, and hydroxyethylation”. Support for this amendment can be found, at least, in the application as filed at page 7, lines 17-26.

Applicants are not conceding in this application that the canceled claims are not patentable over the art cited by the Examiner. Nor are Applicants conceding that the amended claims would not have been patentable without the current amendments. The present claim cancellations and amendments are intended only to facilitate expeditious allowance of valuable subject matter. Applicants respectfully reserve the right to present and prosecute the original versions of canceled and amended claims in one or more continuing applications.

Claims 35-45 have been added to further claim the invention. Support for claims 35-39 can be found, at least, in the application as filed at page 7, lines 17-26. Support for claim 40 can be found, at least, in the application as filed at page 22, lines 17-18.

Support for claim 41 can be found, at least, in the application as filed at page 10, lines 7-9. Support for claim 42 can be found, at least, in the application as filed at page 10, lines 10-11. Support for claim 43 can be found, at least, in the application as filed at page 8, lines 18-20. Support for claim 44 can be found, at least, in the application as filed at page 12, lines 19-21. Support for claim 45 can be found, at least, in the application as filed at page 8, lines 2-3.

#### Indefiniteness Rejection

Claim 30 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. 01/21/2009 Office Action, page 4, last paragraph. This rejection is moot in view of the present cancellation of claim 30.

#### Anticipation Rejections over Frolich

Claims 2-5, 16, 30, and 34 stand rejected under 35 U.S.C. § 102(b), as anticipated by Frolich et al. (6093217). 01/21/2009 Office Action, page 5, paragraph no. 3. The rejections of claims 2-5, 30, and 34 are moot in view of their present cancellation. Applicants respectfully traverse the rejection of claim 16 to the extent it may be applicable to the claim as currently amended.

Frolich generally describes an aqueous dispersion containing a cellulose-reactive sizing agent and an anionic hydrophobically modified cellulose-derivative, its preparation and use in the production of paper. Frolich abstract. In Frolich's methods of preparing his aqueous dispersions, the dispersion of the cellulose-reactive sizing agent is formed in the presence of the anionic hydrophobically modified dispersing agent. Frolich, column 6, line 43 to column 7, line 17.

Applicants respectfully assert that claim 16 is not anticipated by Frolich because Frolich does not teach emulsifying alkenylsuccinic anhydride with a first starch component containing starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by a process selected from oxidation, acid modification, heat treatment, acetylation, and hydroxyethylation.

Anticipation requires that all of the limitations of the claim be found within a single prior art reference. *Scripps Clinic & Research Foundation v. Genentech, Inc.*, 927 F.2d 1565, 1576 (Fed. Cir. 1991). “Because the hallmark of anticipation is prior invention, the prior art reference – in order to anticipate under 35 U.S.C. § 102 – must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements “arranged as in the claim.”” *Net MoneyIn v. Verisign*, No. 2007-1565, slip op. at 15, 2008 WL 4614511 at \*8, (Fed. Cir. 2008) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)).

Applicants’ independent claims 16, as currently amended, requires the step of “(a) emulsifying alkenylsuccinic anhydride with a first starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof, and thereby forming an emulsion; wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by a process selected from oxidation, acid modification, heat treatment, acetylation, and hydroxyethylation”. Frolich does not teach this step. In a passage of Frolich relied on by the Office, the dispersion is “produced by mixing an aqueous phase with the [hydrophobically modified] dispersing agent and the sizing agent, and optionally the surfactant, preferably at a temperature where the sizing agent is liquid, and homogenizing the mixture so obtained, suitably under pressure.” Frolich, column 7, lines 61-65; 01/21/2009 Office Action, page 3, first full paragraph. It is important to note that the portions of Frolich relied on by the Office utilize a hydrophobically modified dispersing agent as the component allegedly corresponding to the starch of Applicants’ first starch component. However, the required hydrophobic modification of Frolich’s dispersing agents distinguish them from the starch of Applicants’ claim 16 first starch component, which consists of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by a process selected from oxidation, acid modification, heat treatment, acetylation, and hydroxyethylation. Note that the recited starch modification techniques recited in amended claim 16 do not include any technique that could be characterized as hydrophobic modification. So, the starch of Applicants’ claim 16 first starch component is not hydrophobically modified. Frolich therefore fails to teach the claim 16 step of “(a) emulsifying alkenylsuccinic anhydride with a first

starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof, and thereby forming an emulsion; wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by a process selected from oxidation, acid modification, heat treatment, acetylation, and hydroxyethylation". Accordingly, Frolich does not anticipate claim 16.

Applicants therefore respectfully request the reconsideration and withdrawal of the rejection of claim 16 under 35 U.S.C. § 102(b) over Frolich.

#### Obviousness Rejections over Frolich

Claims 7-11 and 34 stand rejected under 35 U.S.C. § 103(a), as unpatentable over Frolich. 01/21/2009 Office Action, page 6, paragraph no. 4. These rejections are moot in view of the present cancellation of claims 7-11 and 34.

#### Obviousness Rejections over Frolich + Chunyu

Claim 6 stands rejected under 35 U.S.C. § 103(a), as unpatentable over Frolich as evidenced by Chunyu "Alkenyl Succinic Anhydrides (ASA): a Neutral sizing agent", China Pulp & Paper, No. 3, 2002, provided by applicant. 01/21/2009 Office Action, page 8, paragraph no. 5. This rejection is moot in view of the present cancellation of claim 6.

#### Anticipation or Obviousness Rejection over Frolich

Claim 30 stands rejected under 35 U.S.C. § 102(b), as allegedly anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Frolich. 01/21/2009 Office Action, page 8, paragraph no. 6. This rejection is moot in view of the present cancellation of claim 30.

#### Anticipation or Obviousness Rejections over Conner

Claims 2-5, 7-9, 16, 30 and 34 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Conner et al. (6183550). 01/21/2009 Office Action, page 9, paragraph no. 7 (claims 2-5,

7-9, 16, 30 and 34); page 11, paragraph no. 8 (claim 30, again). The rejections of claims 2-5, 7-9, 30, and 34 are moot in view of their present cancellation. Applicants respectfully traverse the rejection of claim 16 to the extent it may be applicable to the claim as currently amended.

Conner generally describes aqueous paper size dispersions comprising: a) at least one paper sizing compound, and b) a water-soluble dispersant containing at least two hydrophilic groups and at least one hydrophobic group. Conner abstract. Conner's paper size dispersion can, optionally, contain starch or modified starch. Conner, column 9, lines 25-29. However, Conner does not teach emulsifying the paper sizing compound in the presence of starch. To the contrary, Conner repeatedly teaches addition of pre-formed dispersion of sizing compound to a starch solution. See, e.g., Conner, Example 2 (especially column 11, lines 52-53), Example 6 (especially column 13, lines 30-38), Example 7 (especially column 13, lines 51-64), and Example 10 (especially column 14, lines 60-66).

Applicants respectfully assert that claim 16 is not anticipated by or obvious over Conner because Conner does not teach or suggest the claim 16 step of "(a) emulsifying alkenylsuccinic anhydride with a first starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof, and thereby forming an emulsion; wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by a process selected from oxidation, acid modification, heat treatment, acetylation, and hydroxyethylation".

Anticipation requires that all of the limitations of the claim be found within a single prior art reference. *Scripps Clinic & Research Foundation v. Genentech, Inc.*, 927 F.2d 1565, 1576 (Fed. Cir. 1991). "Because the hallmark of anticipation is prior invention, the prior art reference – in order to anticipate under 35 U.S.C. § 102 – must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements "arranged as in the claim."" *Net MoneyIn v. Verisign*, No.

2007-1565, slip op. at 15, 2008 WL 4614511 at \*8, (Fed. Cir. 2008) (*quoting Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)).

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Establishing a *prima facie* case of obviousness requires that all limitations of the claim be taught or suggested by the prior art. *See, e.g., CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003); *In re Royka*, 490 F.2d 981, 985 (C.C.P.A. 1974).

Conner does not anticipate or render obvious claim 16 because Conner does not teach or suggest emulsifying alkenylsuccinic anhydride in the presence of starch let alone the specific starches of Applicants' claim 16 first starch component. To the contrary, Conner repeatedly teaches addition of a pre-formed dispersion of sizing compound to a starch solution. *See, e.g., Conner, Example 2* (especially column 11, lines 52-53), *Example 6* (especially column 13, lines 30-38), *Example 7* (especially column 13, lines 51-64), and *Example 10* (especially column 14, lines 60-66).

In response to Applicants' previous arguments, the Office Action states that "cols 11 and 12, Example 3 teach making the dispersions with the sizing agent, dispersant and stabilizer (first starch component)". 01/21/2009 Office Action, page 3, last paragraph. However, Applicants respectfully assert that it is not possible to determine from Conner Example 3 whether the "starch stabilizer" was present when the AKD was emulsified. Note, in particular, that Example 3 states that "The method of preparation was the same as that described for Example 1", but Example 1 does not include a stabilizer.

In response to Applicants' previous arguments, the Office Action also states, "In Example 4, the preformed dispersion of Example 3, which contains the stabilizer, is added to a solution of starch (second starch component) prior to sizing paper according [to] the procedures of Example 2". 01/21/2009 Office Action, page 3, last paragraph. However, Example 4 does not cure the failure of Example 3 to teach the emulsification of sizing agent in the presence of starch.

In the context of the current rejection, the Office Action states,

Conner et al discloses a method of making the sizing compositions comprising emulsifying the sizing agent, dispersant and stabilizer in water (Col 9, lines 5-29; col. 11, lines 17-43, Example 1; Col 12, lines 13-20, Example 3).

01/21/2009 Office Action, page 10, first full paragraph. Applicants respectfully disagree with this characterization of Conner. Specifically, not one of the cited passages of Conner teaches emulsifying sizing agent in the presence of a starch stabilizer. The Office appears to concede as much by further stating that “Conner et al does not disclose the first starch component as an emulsifying starch”. 01/21/2009 Office Action, page 10, last paragraph.

To summarize, the Office has not established that Conner teaches or suggests Applicants’ claim 16 step of “(a) emulsifying alkenylsuccinic anhydride with a first starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof, and thereby forming an emulsion; wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by a process selected from oxidation, acid modification, heat treatment, acetylation, and hydroxyethylation”. As such, claim 16 is neither anticipated by nor obvious over Conner. Applicants therefore respectfully request the reconsideration and withdrawal of the rejection of claim 16 under 35 U.S.C. § 102(b) or under 35 U.S.C. § 103(a) over Conner.

Obviousness Rejection over Conner + Chunyu

Claim 6 stands rejected under 35 U.S.C. § 103(a), as unpatentable over Conner as evidenced by Chunyu “Alkenyl Succinic Anhydrides (ASA): a Neutral sizing agent”, China Pulp & Paper, No. 3, 2002, provided by applicant. 01/21/2009 Office Action, page 12, paragraph no. 9. This rejection is moot in view of the present cancellation of claim 6.

Obviousness Rejections over Conner

Claims 10 and 11 stand rejected under 35 U.S.C. § 103(a), as unpatentable over Conner et al. (6183550). 01/21/2009 Office Action, page 12, paragraph no. 10. These rejections are moot in view of the present cancellations of claims 10 and 11.

Nonstatutory Double Patenting Rejections

Claims 4-11, 16, and 30 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1, 3-11, 44, and 45 of copending Application No. 10/534,202. 01/21/2009 Office Action, page 13, paragraph no. 11.

Claims 4-11, 16, and 30 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1, 4, 6-13, 46, and 47 of copending Application No. 10/533,190. 01/21/2009 Office Action, page 14, paragraph no. 12.

The rejections of claims 4-11 and 30 are moot in view of their present cancellation. With respect to the rejections of claim 16, Applicants thank the Examiner for pointing out the potential obviousness-type double patenting issue between claim 16 of the present application and the cited claims of co-pending Application Nos. 10/534,202 and 10/533,190. In view of the possibility that claims in the cited application or the present application will be further amended before allowance, Applicants will defer responding to this provisional rejection until claims in the reference application are allowed, claims in the present application are otherwise allowable, and it is determined whether this provisional rejection becomes an actual rejection.



It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is respectfully requested.

It is believed that all the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130 maintained by Assignee.

Respectfully submitted,

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